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ABSTRACT

Second-grade pupils who were taught reading in the first grade with the Initial Teaching Alphabet (i.t.a.) were compared with pupils who were taught reading with traditional orthography (TO). Seventy students from two schools in Moline, Illinois, were divided into a control group (using TO) and an experimental group (using i.t.a.) and were matched on intelligence and socioeconomic factors. Both groups were using the same basal readers (TO) in the second grade. The children were tested on the Stanford Achievement Test, Primary II, Reading and the Kuhlman Anderson Test of Intelligence in the second grade. Data indicated that (1) the i.t.a. group did not achieve significantly higher reading scores than the TO group; (2) the i.t.a. group did achieve higher scores on one variable, Word Study Skills; and (3) at one school, above-average i.t.a. students achieved significantly higher than average i.t.a. students, but this was not the case at the other school. It was recommended that further research be made of an i.t.a. program in the first grade. Tables, references, and appendixes are included. (AL)

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A STATISTICAL COMPARISON OF THE ACADEMIC ACHIEVEMENT IN READING OF STUDENTS IN THE INITIAL TEACHING ALPHABET PROGRAM AND STUDENTS IN THE TRADITIONAL ORTHOGRAPHY PROGRAM

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in the Graduate Program of Marycrest College

May, 1971

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CHAPTER I

INTRODUCTION

Reading is by far the most important subject that the young child learns in school. It is also the most difficult to teach. For centuries, teachers and students have been aware of the chaos and unnecessary confusion of the traditional orthography of English. In 1876, Professor Max Muller wrote:

> With printed books, the spelling of words became rigid and universally binding. Some languages, such as Italian, were more fortunate than others in having a more rational system of spelling to start with. Some, again, like German, were able to make timely concessions, while others, such as Spanish, Dutch, and French, had Academies to help them at critical periods in their history. The most unfortunate of all these respects was English. It started with a Latin alphabet, the pronunciation of which was unsettled, and which had to be applied to a Teutonic language. After this first phonetic compromise, it had to pass through a confused system of spelling, half Saxon, half Norman; half phonetic, half traditional. And even after English reaches the period of printing, the confusion is by no means terminated.[1]

Thus, to some educators, it seemed logical to formulate an alphabet for teaching beginning reading. In

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[1]Maurice Harrison, The Story of the Initial Teaching Alphabet (New York: Pitman Publishing Company, 1964), p. 12.

England, Sir James Pitman devised the Initial Teaching Alphabet (I.T.A.). The Initial Teaching Alphabet was uniquely designed as a transitional alphabet. Gross irregularities in Traditional Orthography (T.O.) spelling were removed, and the alphabet was augmented with additional characters for those phonemes which had no letter representative in Traditional Orthography. The goals of simplicity and regularity were maintained in order to ease transfer from reading I.T.A. to reading T.O. The aim was to enable the beginning reader to learn to read our traditional English spelling with greater fluency, comprehension, and competence.

The first extensive investigation of the effectiveness of the Initial Teaching Alphabet for beginning readers was conducted in English Primary Schools early in the 1960's by John A. Downing, Director of Reading Research, University of London, London, England. The results of these research findings compiled by Downing and his associates stimulated interest in the I.T.A. Reading Program, and experimentation began in many elementary schools of the United States, particularly in the East and Midwest.

The I.T.A. Reading Program was introduced into the Moline Public School System, Moline, Illinois, at the first grade level in 1965 as an experimental pilot study. Roosevelt Elementary School had maintained the I.T.A. Reading Program for six years beginning the school year 1965-1966; Logan Elementary School for five years beginning the school year 1966-1967.

Evidence from research findings by authorities in the reading field created interest in the I.T.A. Reading Program; consequently, those principals and teachers interested and willing to try this experimental pilot project were given permission to do so by the Superintendent of Moline Public Schools. Parent orientation meetings were held to discuss the I.T.A. Reading Program; children were then placed in the I.T.A. Reading Program by parental consent.

Statement of the Problem

This study involved two major problems. The first problem was to determine whether the reading achievement of the children at Roosevelt and Logan Elementary Schools, who began their reading instruction with I.T.A. and later transferred to T.O., was superior to that of the children whose initial reading instruction was in T.O. In other words, was the two-stage process in initial reading instruction worthwhile in the final outcome?

The second problem was to determine whether instruction in I.T.A. was more successful for a particular ability group.

Hypothesis

This study tested the following null hypothesis:

> H_o: As second graders reading T.O., pupils taught by I.T.A. at first grade level will not be significantly superior in the reading areas of word meaning, paragraph meaning, and word study skills to pupils of comparable intelligence

taught by T.O. as first graders.

Purposes of the Study

1. To compare the growth in reading achievement in word meaning, paragraph meaning, and word study skills during second grade for both the Experimental I.T.A. Group and the Control T.O. Group.
2. To determine if the I.T.A. Reading Program provides significant reading achievement for a particular ability group.
3. To provide some initial data for the Moline Public School System as to whether I.T.A. is an effective initial reading program for first grade students.

Significance of the Study

This study and research into the I.T.A. Reading Program and the T.O. Reading Program, currently used in the Moline Public Schools, will give more knowledge with which to evaluate curriculum growth and direction. If changes are necessary, they must be recognized in order to bring about feasible decision-making, curriculum analysis, and revision.

Definition of Terms

Definitions of certain terms used frequently

throughout this study are given below.

I.T.A.: I.T.A. is basically a two-stage approach to teaching reading. The child first learns to read and write with the "Initial Teaching Alphabet" (I.T.A.).

T.O.: The way in which the English language is printed. It is known as "Traditional Orthography" (T.O.),

ability group: A particular ability group was determined by this criteria - Above Average Ability consisted of an I.Q. score of 111 and above; Average Ability consisted of an I.Q. score of 110 and below.

Limitations of the Study

The following limitations of the study are to be noted.

1. This study involved only second grade students (70) from two public elementary schools of fairly comparable socio-economic level in a single city.
2. In each school, the Experimental I.T.A. Group was selected from two classrooms whereas the Control T.O. Group came from one single classroom.

Plan of Presentation

A thorough search into related literature has been made. The material has been organized and critically evaluated in order to find meaningful relationships pertinent to the thesis study.

The design of the study and the experimental procedures utilized in the study have been presented. The raw score data has been tabulated and presented in Appendix C.

The statistical analysis of this data has been computed and prepared in table form. A summary of the findings has been reported; conclusions have been made, implications cited, and recommendations given.

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

Introduction

This chapter presents a brief statement concerning the origin, purpose and development of the Initial Teaching Alphabet, a condensed report of the first major experimentation in I.T.A. in Great Britain, summaries of previous studies dealing with the Initial Teaching Alphabet in the United States pertinent to this investigation, and a discussion of present viewpoints held by reviewers of the I.T.A. research.

Background on the Initial Teaching Alphabet

In 1959, Sir James Pitman invented the Initial Teaching Alphabet. He described its aim in this way:

> The alphabet here put forward is a 'reformed' Roman one. It is new. It is, however, an augmentation of the existing lower-case Ehrahardt alphabet of the monotype corporation, and its augmentations have been designed for the purpose of providing a consistently alphabetic representation of the English language, suitable primarily for teaching reading to English-speaking children (and adults), and secondly, for teaching English speech and reading to adults (and children) who already speak some other language and may read it in Roman characters.[1]

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[1]Maurice Harrison, The Story of the Initial Teaching Alphabet (New York: Pitman Publishing Company, 1964), pp. 105-106.

Sir James wished to make clear that the alphabet was not a design of reformed spelling but a device for teaching reading to be used in the initial stages only. It was a "teachers' tool" - one to be left behind and forgotten when it achieved its teaching purpose.

With this clearly defined purpose in mind, two basic changes were made in the written character forms. First, only one fixed form was devised for each character. Thus, the beginning reader would never be confused by variant letter forms and reinforcement of the letter forms would be greatly increased. The capital-letter forms were eliminated, and the small letter themselves were always of the same shape. When capital letters were required, the small letters were simply written larger. Second, the digraphs were printed as one letter both in their shaping and their spacing. For example, in the word, bishop, the middle consonants are clearly a single sound. Thus, sh becomes ʃ .

Another advantage of the Initial Teaching Alphabet (I.T.A.) often cited by its proponents is that the beginner has only forty-five characters to master which is far fewer than those the beginner must master in order to read Traditional Orthography (T.O.). More than seventy characters must be learned for reading our customary spelling.

Pitman made clear that the new alphabet was not intended to be a phonetic alphabet, but simply an alphabet

in which one sign always represented one sound only. However, in the final anlysis, I.T.A. did retain some of the inconsistencies of T.O. C and k were both used when they were present in a T.O. word, such as kick. Double letters were written as they occur in T.O., such as the word, little. Y was used both as a vowel and as a consonant. The unstressed neutral vowels were written as in T.O.; the, cubord (cupboard), onor (honor), etc.

Finally, in order to facilitate transition to reading T.O., Sir James Pitman took into consideration the fact not so commonly realized, that when we read fluently and quickly we look only at the upper part of a line of print. If we cover the bottom half of a line of print, we can still read the text quite satisfactorily. However, if the upper half is covered, very great difficulty is experienced in reading. In the Initial Teaching Alphabet, the upper appearance of the characters remained almost unchanged; all the distinguishing features of the new alphabet are located in the bottom half.

There are forty-five (45) characters in the Initial Teaching Alphabet. Twenty-seven (27) consonants and seventeen (17) vowels in addition to y, which may be classified as either, are represented. A character chart of Sir James Pitman's[2] Initial Teaching Alphabet may be found in Appendix A.

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[2]John Downing, The Initial Teaching Alphabet (New York: MacMillian Co., 1966), pp. 16-18.

Experimentation in I.T.A.

In Great Britain

The test of the Initial Teaching Alphabet was put through two educational research bodies in Britain, the University of London and the National Foundation of Educational Research, with the active support of all three parties in education - teachers, local education authorities, and, particularly, the Ministry of Education.

In 1960, John A. Downing, Director of the Reading Research Unit, University of London, London, England, began investigation into the effectiveness of the Initial Teaching Alphabet for beginning readers. Using matched Experimental I.T.A. and Control T.O. Groups from twenty-one primary schools, Downing[3] found these results.

In word recognition, the Experimental I.T.A. Group marked superior to the Control T.O. Group on the Schonell Graded Word Reading Test administered, at first grade level, in September, 1961, and June, 1962, and, at the second grade level, in February, 1963. The same pupils were tested on The Neale Analysis of Reading Ability Test for comprehension, accuracy, and speed. The Experimental I.T.A. Group took the identical test transliterated in I.T.A., February, 1963.

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[3]John Downing, "New Alphabet Helps Beginning Reader," Catholic School, 63, (September, 1963), pp. 46-48.

The I.T.A. Group marked significantly higher than the T.O. Group. Another important finding confirmed by objective data at this time, 1963, was that children began to read at an early age. In I.T.A. classes, it was found that four year olds learned to read just as well as five year olds.

Downing's research showed five important ways that I.T.A. pupils learned to read more easily.

1. There was only one visual pattern for each word. The beginner was not confused by different appearances of the same word.

2. I.T.A. drastically cut down ambiguity. The letter 'o,' for example, in T.O. signals five different sounds, as in the words: move, cove, gone, one, and woman. In I.T.A., each different sound is signaled by a different letter. Letter 'o' represents only the sound of o in the word, gone.

3. I.T.A. was much less complex in teaching words with multiple letter spellings, such as ch, th, etc. which do not signal the same sound as their individual letters.

4. I.T.A. represented basic sounds of English in a consistent left-to-right sequence. The beginning reader in T.O. must invert vowel sounds of the second and fourth letters of the words, bone and lane. The silent 'e' on the end of these words signals a long vowel sound for the first vowel. Thus, the reader experiences uncertainty about the left-to-right sequence in the printed code. In I.T.A. every word is read from left to right with each consecutive letter signaling each consecutive sound.

5. There are far fewer items in I.T.A. For example, the o͞o sound in I.T.A. is one character. In T.O., the o͞o sound appears in varied spellings - ruby, rule, do, move, fruit, bruise, group, troupe, through, moon, wooed, ooze, rheumatism, flu, maneuver, grew, canoe, and two. Thus, there are

eighteen different ways of signaling the same sound in T.O.

John Downing[4] concluded that the beginning reader must attain fluency in reading I.T.A. before achieving the transition to reading T.O. Once a high level of fluency in I.T.A. had been achieved, the pupil would have developed the necessary skill of using the minimal cues and contextual clues which would ensure a smooth transfer.

In 1965, summary and review of the first substantive account of Experimental I.T.A. work conducted by the University of London in collaboration with the National Foundation of Education in England and Wales appeared. The long-range experimentation of Downing and associates had progressed sufficiently to provide objective data to answer three questions.

1. Is our traditional orthography of English an important cause of difficulty in beginning reading?

2. If children learn to read more rapidly and with greater success with the simplified and regularized I.T.A. reading system, can they transfer their superior reading skill from I.T.A. to T.O.?

3. Is this two-stage process worthwhile in the final analysis? Are the reading attainments of the I.T.A. Group superior after transfer to what they would have been without the intervention

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[4]John Downing, "I.T.A. Reading Experiment," Reading Teacher, 18, (November, 1964), pp. 105-110.

of the I.T.A. system for beginners?[5]

The recruitment of the total sample consisted of over 2,500 children, four and five years of age, from seventy-five primary schools. Downing attempted to insure that the only major difference between the Experimental I.T.A. Group and the Control T.O. Group from each school was the orthography in which reading and writing instruction was given.

To research question one, Downing stated Hypothesis 1 and Hypothesis 2.

> Question 1: Is the traditional orthography of English an important cause of difficulty in beginning reading?
>
> Hypothesis 1: 'The lighter load of learning in the use of I.T.A. will lead to significantly more rapid progress through the basal reader series.'[6]
>
> Hypothesis 2: 'Pupils learning to read with the more systematic code of I.T.A. will achieve significantly higher scores on reading tests in which lower-order decoding skills have an especially important role in solution.'[7]

Careful records were kept on the dates in which pupils successfully completed each of the basal readers. The data was compiled on per cent frequency distribution graphs and comulative frequency distribution histograms. The results

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[5]John Downing, The Initial Teaching Alphabet Reading Experiment (Chicago: Scott, Forsman & Co., 1965), pp. 96-125.

[6]Ibid., p. 99.

[7]Ibid., p. 109.

showed clearly that the Experimental I.T.A. pupils were significantly in advance of the Control T.O. pupils. The samples of the evidence strongly supported the first hypothesis as I.T.A. appeared to be a more systematic code for English than T.O.

To test Hypothesis 2, children in I.T.A. classes were tested on the I.T.A. version of the Schonell Graded Word Reading Test and their attainment was compared with those of the pupils in the T.O. classes who were tested in T.O. The results showed "Control Group Mean 10.9, S.D. 10.6, Experimental Group Mean 37.1, S.D. 27."[8] The results strongly supported the second hypothesis. It appeared that the greater consistency of character-to-sound relationship of I.T.A. produced superior attainments in decoding print into speech; and the conclusion was that T.O. seriously frustrates children's attempts to translate print signals into their own English language.

> Question 2: Can children transfer their training in reading I.T.A. to reading T.O.?
>
> Hypothesis 3: 'In I.T.A. classes, reading achievements in T.O. will not be significantly inferior to achievements in I.T.A. once an appropriate level of skill has been attained by pupils learning to read with I.T.A.'[9]

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[8]John Downing, "Teaching Reading with I.T.A. In Britain," Phi Delta Kappan, 45, (April, 1964), p. 327.

[9]Downing, op. cit., p. 115.

The Neale Analysis of Reading Ability Test was administered in order to test Hypothesis 3. When Form C of the Neale was administered to all pupils of the matched pairs of classes, February, 1963, the I.T.A. pupils were tested on an I.T.A. version of Form C while the T.O. pupils had the same test in T.O. In the following month, March, 1963, Form A of the Neale was administered, but this time both the Experimental I.T.A. Group and the Control T.O. Group were tested in T.O.

The overall comparison between the I.T.A. Group's performance in I.T.A. and its performance in T.O. supported the third hypothesis in respect to comprehension and speed. The pupils in the I.T.A. Experimental Group read T.O. faster than they had I.T.A. a month previously. They were less accurate in reading T.O. than they had been in I.T.A., but their achievements in comprehending T.O. prose were just as satisfactory as they had been in comprehending I.T.A. prose a month earlier.

> Question 3: After the whole process of learning with I.T.A. and transferring to T.O., are reading attainments in T.O. at that stage superior to what they would have been without the intervention of the I.T.A. system for beginners?
>
> Hypothesis 4: 'Pupils who have first learned with I.T.A. will read T.O. with significantly greater speed, accuracy, and comprehension than pupils who have not used I.T.A. in the initial stages.'[10]

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[10] Ibid., p. 120.

Measurement for this hypothesis was, again, the Neale Analysis of Reading Ability as the data was also relevant to this hypothesis. Results were compared when both the Experimental I.T.A. Group and the Control T.O. Group were tested in T.O. on Form A. With regard to speed of reading, the hypothesis was not supported as the difference was not significant at the .05 level of confidence. However, the superiority of the I.T.A. group in both accuracy and comprehension in reading T.O. was highly significant. It was concluded that children who use I.T.A. for beginning reading not only can transfer their training to T.O., but are also able, one and one-half years later, to read T.O. with much greater accuracy and comprehension than children who have been attempting to learn T.O. from the very beginning.

In 1967, John Downing[11] issued an interim report. He again tested for Hypothesis 4 and stated it as follows.

> Hypothesis 4: 'Pupils who have first learned to read with I.T.A. and then made the transition to T.O. should read the latter with significantly greater accuracy, speed, and comprehension than pupils who have not used I.T.A. in the beginning.'[12]

A second test of Hypothesis 4 was provided by the

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[11] John Downing, The I.T.A. Symposium (New York: New York University Press, 1967), pp. 39-52.

[12] Ibid., p. 39.

Schonell Graded Word Reading Test administered at the beginning of the third school year. The results seemed to support Hypothesis 4 since the Experimental I.T.A. Group now achieved T.O. scores significantly higher to those of the Control T.O. Group.

A third test of Hypothesis 4 was made by administering the Neale Analysis of Reading Ability (Form B) in T.O. to both the experimental and control groups at the end of the third school year. All three measures of this test seemed to provide support for Hypothesis 4. By the end of the third year, the I.T.A. group achieved scores for accuracy, speed, and comprehension significantly superior to the T.O. group scores.

Hypothesis 4 was tested in a fourth way on another type of reading test - The Standish N.S. 45 Test. This was a silent reading comprehension test originally designed for children at the beginning of the Junior School (Age seven plus). In this experiment, it was used at a slightly earlier stage. All pupils in the experimental and control groups were given the Standish Test in T.O. at the end of their Infant School careers (Age 4,5,6). Some of these pupils had then been in school for only two years, but others had been in school for three years.

In the two-year-taught groups, there was a trend for T.O. pupils to be superior to I.T.A. pupils. In the three-year-taught groups, this trend was reversed. But in neither

case was the difference statistically significant at the .05 level of confidence.

In this interim report, Downing posed two additional questions.

> Question 4: Will children's written compositions be more fluent with the simpler I.T.A. code for speech?
>
> Question 5: How will children's later attainments in T.O. spelling be influenced by their earlier experiences of reading and writing the different spelling of I.T.A.?

To research question 4, Hypothesis 5 and 6 were established.

> Hypothesis 5: 'The written compositions of I.T.A. pupils should be longer than those of children who begin reading with T.O.'[13]
>
> Hypothesis 6: 'The written vocabulary of I.T.A. pupils should be more extensive than that of their T.O. counterparts.'[14]

A normal sampling of one week's written work was obtained from an Experimental I.T.A. and Control T.O. Group of 108 children total. When written work was collected, the majority of I.T.A. children had made the transfer from I.T.A. to T.O. in their reading.

The criterion for testing Hypothesis 5 was a simple count of the total number of words used in one week by each of the 108 pupils. This total was then broken down to yield

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[13] Ibid., p. 40.

[14] Ibid.

net basic vocabulary plus repetitions and net "more advanced" vocabulary plus repetitions. These measures provided a test for Hypothesis 6.

A study of heterogeneity of individual results was carried out by statistical methods. This procedure justified averaging over individuals within schools, but not over sets of schools because the T.O. and I.T.A. schools all differed significantly among themselves.

By inspection, it then appeared that the T.O. schools were considerably more heterogeneous than the I.T.A. schools. After allowing for this, however, it remained that there was a clear tendency for I.T.A. to give superior results. Even if all the T.O. schools were up to the standard of the "best" T.O. school in the set, the I.T.A. schools were still significantly better with respect to overall word-count and total incidence of "more advanced" words.

It remained an open question, however, whether these differences were due to uncontrolled factors. It was noticeable, for example, that different schools submitted writings with different recurring themes such as visits to the zoo, visits to the ocean, etc. Some themes would presumably give rise to higher word-counts and to larger numbers of "more advanced" words than others would. The overall impression still remained that the I.T.A. children were superior in their written composition work.

> Question 5: How will children's later attainments in T.O. spelling be influenced by their earlier experiences of reading and writing the different spelling of I.T.A.?
>
> Hypothesis 7: 'Spelling attainments in T.O. after the transition stage should be superior in classes where I.T.A. was used for the beginning stages.'[15]

The Schonell Graded Word Test (Form A) was applied in the middle of the third school year and Schonell (Form B) in the middle of the fourth school year. The results of both tests indicated that the I.T.A. pupils' spelling attainments were superior after transfer to T.O. to the attainments of the T.O. pupils. However, only on the second spelling test does the difference reach the .05 level of confidence.

The following generalized conclusions seemed to be supported reasonably well by the results of these experiments of John Downing and his associates (1967).

> 1. I.T.A., as an example of a transitional alphabet for beginning reading and writing in English, generally produces superior results in T.O. reading and T.O. spelling by the end of the third year of school.
>
> 2. The success of I.T.A. in improving T.O. literacy skills occurs in spite of a setback in the growth of these basic skills at the stage of transition from I.T.A. to T.O.
>
> 3. The traditional orthography of English is a serious cause of difficulty in the early stages of learning to read and write.[16]

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[15] Ibid., p. 43.

[16] Ibid., pp. 49-51.

The findings and implications of John Downing's research into the Initial Teaching Alphabet had a great impact on educators, particularly on those educators who dealt with the young child and his reading development. Thus, research was launched in the United States to investigate the success of the Initial Teaching Alphabet when used with the beginning reader.

Experimentation in I.T.A. in the United States

In 1964, John Downing and Ivan Rose,[17] former Associate of the Reading Research Unit, University of London, Institute of Education, London, England, published the results from a pilot study in Stockton, California, on the attainment of children using I.T.A. and children using T.O. The research showed that after five months, the four and five year olds who were using I.T.A. materials were significantly in the lead and their superiority increased as the months went on. Twenty-five per cent of the total I.T.A. Group, (413 children), had gone beyond the basal reader series by the end of the first year as compared with only four per cent of the total T.O. Group, (687 children). At the end of the two years, the comparative positions were seventy-six per cent for the I.T.A. Group and thirty-six per cent for the T.O. Group.

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[17]John Downing and Ivan Rose, "Value of I.T.A.," NEA Journal, 53, (September, 1964), pp. 20-22.

All the data collected in this research pointed toward the same conclusion. On tests of comprehension, word recognition, and speed of reading, children learning to read with I.T.A. demonstrated superiority. It was concluded that I.T.A. greatly lightened the load of the beginning reader.

Warren C. Cutts, Specialist for Reading, United States Office of Education, summarized and evaluated Downing and Rose's research in California. He stated at this time, 1964, the following conclusions:

> 1. I.T.A. was a simpler, consistent, spelling system. Its consistency of direction in reading was rule. Phonic symbols seemed less complex. Tests made of the I.T.A. pupils' ability to read T.O. showed that transfer to reading T.O. was quite easy.
>
> 2. The Hawthorne effect would never be completely eliminated in educational experiments since teacher enthusiasm was an uncontrollable factor.
>
> 3. Some children would find it difficult to discard one medium and master another due to their mental abilities and psychological setbacks.
>
> 4. Too early acceptance was likely to bring about a sharp cleavage between proponents and opponents of I.T.A. Educators should suspend judgment until more evidence was available.[18]

The determining of the best method of teaching reading was a great "debate" among many educators and the impact of

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[18]Warren Cutts, "It's Too Soon To Know Definitely," NEA Journal, 53, (September, 1964), p. 22.

the Initial Teaching Alphabet added excitement as well as intellectual curiousity to the issue. Thus, in 1964, the United States Office of Education launched an eight hundred thousand dollar Cooperative Research Project to determine the best methods of teaching children to read.

One of these twenty-seven studies sponsored by the U. S. Office of Education, 1964-1965, was conducted by R. B. Hayes, Supervisor of Research, Bureau of Research, Harrisburg, Pennsylvania.

In Hayes' study, these four approaches were used and compared.

1. Basal approach, ability grouping, 'whole-word,' published by Scott Forsman (SF).

2. Preceding approach supplemented by a phonics workbook, published by Phonic-Wordpower (PWP).

3. Phonics filmstrips, whole-class approach, published by Lippincott (LIPP).

4. Early-to-Read Ability Grouping Language Arts Program, published by I.T.A. Publications (ITA).[19]

There were 445 pupils randomly assigned to one of the four reading programs in which the teacher was to use only those materials and methods recommended by the particular book company. Each reading program had five first grade classes,

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[19]R. B. Hayes, "I.T.A. and Three Other Approaches to Reading in First Grade," Reading Teacher, 19, (May, 1966), p. 629.

a total of twenty classes and twenty teachers were involved.

Hayes'[20] research showed that on January 26 and 27, 1965, (82 days of instruction), the Stanford Achievement Test, Primary I Battery, (Form W), was administered with a transliterated form for the ITA Group. On April 28 and 29, 1965, (141 days of instruction), the Stanford Achievement Test, Primary I Battery, (Form X), was administered. The San Diego County Inventory Reading Attitude Test was also given at this time with a non-transliterated form for the ITA Group.

The results of the Stanford Achievement Tests showed that the ITA, LIPP, and PWP Programs appeared to help children achieve higher silent reading scores. These groups scored significantly in Word Reading, Word Study Skills, and Spelling.

The pupils in the PWP Program scored higher on the San Diego County Inventory than those in the other programs. The SF Program appeared to stimulate more outside individual reading as this group had read the greatest number of books.

A group of individual tests were administered between May 3-10, 1965, to a random sample of thirty (30) students. These thirty students were taken from each treatment variable. The tests included: The Gilmore Oral Reading Test, Gates Word

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[20] Ibid., pp. 629-630.

Pronunciation Test (Form 1), and the Fry List of Phonetically Regular Words Oral Reading Test.

The LIPP and ITA Groups were significantly higher than the SF and PWP Groups on both the Fry and Gates Word Lists. For the Gilmore Oral Reading Test, the ITA Group was significantly higher than the others.

Both oral and silent reading achievement results were separated by I.Q. thirds for further analysis. An analysis of variance was computed since the goal was to find which program was best for pupils by ability levels without adjusting for pre-experimental differences. The results indicated that the pupils in the LIPP and ITA Programs scored higher in silent and oral reading on all three I.Q. levels (high, average, and low). In low ability level, the pupils in the SF Program scored high in the Gilmore Accuracy, Comprehension, and Rate Tests.

Albert J. Mazurkiewicz,[21] Director of the Reading and Study Clinic, I.T.A. Studies, Lehigh University, researched I.T.A. and T.O. Reading when methodology is controlled. This research was also sponsored by the United States Office of Education.

The experimentation attempts made by this researcher were, first, rudimentary studies to validate the methodology

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[21]Albert J. Mazurkiewicz, "I.T.A. and T.O. Reading Achievement When Methodology is Controlled," Reading Teacher, 19, (May, 1966), pp. 606-609.

to be used; second, to do a wide-scale field study of the effectiveness of I.T.A. when methodology, which seemed inherent in the use of such systems, was controlled. Informal and Standardized measures were used.

Questions researched by A. Mazurkiewicz were:

> 1. Is there a difference in reading achievement in the tenth week of school as reflected in instructional level achievements when the same method is used but the medium (T.O. or I.T.A.) is different?[22]

It was found that many of the I.T.A. children (over 40%) were achieving reading status at an earlier point than was found possible by the population under T.O. control. There were four instructional levels: Below primer, primer, first, and second.

> At the below primer level, there were 52% I.T.A. children as opposed to 96% T.O. children. At the primer level, there were 43% I.T.A. children and 3% T.O. children. At the first level, there were 2% I.T.A. children as opposed to .2% T.O. children. Finally, at the second level, 1% I.T.A. were found only.[23]

> 2. Is there a difference in reading achievement of the I.T.A. and T.O. subsample populations in the fifth month of school when the same method is used but the medium is different.?[24]

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[22] Ibid., p. 606.

[23] Ibid., p. 608.

[24] Ibid.

A random sample of seventy children, (35 I.T.A. and 35 T.O.), were tested in their own medium by the Botel Reading Inventory, February, 1966. "The Percentage Level of Achievement shows a void gap between the first reader and the fourth reader achievement level of the T.O. population."[25] This suggested that traditional orthography at this point has an inhibiting effect on achievement which only a small percentage of the brightest children can overcome.

The Stanford Achievement Test (Form W) was given also in February, 1966. The same random sample populations of T.O. and I.T.A. children were tested in their own medium. "In all subtest areas, word reading, paragraph meaning, vocabulary, and word study skills, the I.T.A. group scored significantly at the .05 level of confidence."[26]

At this time, 1966, Mazurkiewicz[27] concluded that the use of the I.T.A. medium with an eclectic methodology, which emphasized the unity of the language arts, permitted early development of significant reading skills. The use of the identical methodology with the T.O. medium was unable to uncover the inhibiting effects of the complexity of the

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[25] Ibid.

[26] Ibid.

[27] Ibid.

phoneme-grapheme correspondence on first grade reading achievement. The use of a one-to-one phoneme-grapheme notational system, such as I.T.A., appeared to get at the heart of the difficulty a child has in learning to read, and eliminates the factor of retroactive inhibition in early learning.

Replication of the above study was carried into its second year by Albert Mazurkiewicz[28] in 1967. A multi-based approach continued to be used for both the Experimental I.T.A. Group and the Control T.O. Group. This study was modified somewhat to include an emphasis on Language Arts as related to the reading program. All controls established for the first year were maintained into the second year.

The replication study revealed these general findings:

> 1. I.T.A. children advanced more rapidly in reading and writing experiences; achieved significantly superior reading skills at an earlier time; read more widely; wrote more prolifically, more extensively, and with a higher degree of proficiency than their T.O. counterparts, and have no difficulty in making a reading transition to traditional materials when they were allowed to develop sufficient confidence and efficiency.
>
> 2. I.T.A. children achieved word recognition in T.O. at the end of the first and second years that was significantly better than that of the

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[28]Albert J. Mazurkiewicz, "I.T.A. and T.O. Reading Achievement When Methodology is Controlled - Extended into Second Year," Reading Teacher, 20, (May, 1967), pp. 726-729.

T.O.-taught children. However, this difference was not retained at the end of the third year.

3. I.T.A. children showed higher comprehension as indicated by instructional levels and reader level achievement in all years. However, on Standardized Test Achievement in comprehension, this does not prove significant. The I.T.A. population did not differ from the T.O. population on reading comprehension.

4. I.T.A. children showed no deleterious effects on such measures as rate of reading and accuracy of reading, suggesting that I.T.A. to T.O. reading establishes no hindrances, no negative characteristics to later achievement.[29]

In 1966, R. E. Chasnoff,[30] Reading Specialist, Newark State College, Union, New Jersey, researched into I.T.A. to compare results of a test presented in I.T.A. to the Experimental I.T.A. Group and in T.O. to the Control T.O. Group and to determine if there was a significant difference between mean scores of the experimental group and mean scores of the control group when all subjects took the test in T.O.

Early in the school year (Grade 1), the California Short Form Test of Mental Maturity (Level 0), and the Lee-Clark Reading-Readiness Test were given to each of the Experimental I.T.A. and Control T.O. Groups of the seven participating schools. To study the two groups further,

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[29] Ibid., pp. 728-729.

[30] R. E. Chasnoff, "Two Alphabets," Elementary School Journal, 67, (February, 1967), pp. 257-264.

scores on the Stanford Achievement Test, Primary I Battery, (Form W), were compared at the end of the year.

> Results found no significant difference on the California Short Form and the Lee-Clark Reading-Readiness Tests. Mean score for the Experimental I.T.A. Group of 169 pupils on the transliterated Stanford Achievement Test was 22.20. Mean score for the 150 pupils in the Control T.O. Group was 19.39. The difference between these two mean scores using the t-test statistic was not significant at the .05 level.[31]

Chasnoff's[32] study was continued into its second year, 1967. The Experimental I.T.A. Group and the Control T.O. Group remained intact from the previous year.

Near the 140th day of instruction in second grade, The Stanford Achievement Test, Primary II Battery, (Form W), was administered to both groups in T.O.

> The Mean Grade Scores of the Experimental I.T.A. Group and the Control T.O. Group were compared for each section of the test by the t-test statistic. No significant difference was found between the mean grade scores for four sections of the test: Word Meaning, Paragraph Meaning, Spelling, and Language. When the mean grade scores for the Word Study Skills were compared, it was found that the Experimental I.T.A. Group had significantly higher grade scores.[33]

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[31] Ibid., pp. 263-264.

[32] R. E. Chasnoff, "Two Alphabets - A Follow-Up," Elementary School Journal, 68, (February, 1968), pp. 251-257.

[33] Ibid., p. 252.

The Experimental I.T.A. Group appeared to be more skilled in oral reading and wrote more abundantly than the T.O. Group. The I.T.A. Reading Method did not appear to hinder any progress in reading achievement.

Chasnoff concluded that his findings confirmed a trend that was observed at the first grade level. However, the possible merits of I.T.A. could not be assessed until all the data from all the studies with varying designs had been compared.

Experimentation in I.T.A. in the United States produced various opinions and viewpoints among educators as to its success with the beginning reader. Many of the designs showed a significant advance in reading achievement for pupils using the I.T.A. treatment; whereas other research data produced the opposite trend. Reviewers of this I.T.A. research have presented some critical appraisal and evaluation. Among the differences in opinion, however, regarding this program, all of these reviewers share at least one common concern: the beginning reader and his successful reading development.

Reviewers of the I.T.A. Research

At the present time the long-range effect of the I.T.A. Reading Program are still under analysis. Many reviewers of I.T.A. would like to see more description of control and experimental groups. They also prefer a better review and more thorough study of the transitional period -

and its effects. Finally, much of the choice of standardized tests for measuring reading achievement have not been acceptable to these critics.

Delores Durkin states ". . . the need for more precise description, larger number of subjects."[34] Walter Petty and Paul Burns recommend "cautious interpretation."[35] Also, J. Allen Figurel and James Kerfoot warn that care must be used when examining I.T.A. research. Those that are closely related to the I.T.A. movement tend to give a most "uniformly glowing report."[36] Edward Fry also states ". . . great divergence between the recent I.T.A. studies in both the United States and Great Britain."[37]

In view of these various points stressed by the researchers in the field of reading, this researcher attempted to consider the following guidelines while analyzing the various I.T.A. research available.

1. Is the research scientifically controlled?

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[34]Delores Durkin, "What Other Magazines Say About Reading," The Reading Teacher, 18, (October, 1964), pp. 75-79.

[35]Walter T. Petty and Paul C. Burns, "Summary of Investigation Relating to Language Arts in Elementary English," Elementary English, 41, (February, 1964), pp. 119-137.

[36]James F. Kerfoot, First Grade Reading Programs, (Newark, Delaware: International Reading Association, 1965), p. 77.

[37]Edward Fry, "I.T.A. - A Look at the Research Data," Educational Digest, 33, (October, 1967), p. 15.

2. Has the research been conducted for an appropriate length of time to reveal any effects of the I.T.A. treatment?

3. Are the evaluations of the research relevant and pertinent?

4. Did the research really test I.T.A.?

Thus, it would appear, before one fully accepts I.T.A. with its advantages and disadvantages, "it should be fully understood that I.T.A. is only a way to simplify English orthography."[38]

Summary

John Downing, Albert Mazurkiewicz, and many others have made an exhaustive research effort into the Initial Teaching Alphabet. There appears to be several aspects of the use of I.T.A. which needs further study. However, the research has been an experiment in educational innovation - a process very pertinent to progress in school organization, curriculum, and methods.

The impact of the Initial Teaching Alphabet for beginning readers was one of excitement as well as intellectual curiosity. Much investigation has been done and is being done in the United States and elsewhere. Whatever reservations educators may have about the various aspects of the Initial Teaching Alphabet, the research on it has

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[38]J. Allen Figurel, Vistas in Reading, Part 1. (Newark, Delaware: International Reading Association, 1966), p. 263.

revealed a need for critical reappraisal of children's readiness for learning, the transfer of skills, the role of reading effectiveness, and the significance of difficulties in early school learning upon the total development of the child and his day-to-day growth in the classroom.

CHAPTER III

EXPERIMENTAL PROCEDURES UTILIZED IN INVESTIGATING THE PROBLEM

Introduction

This comparative investigation was undertaken in Moline, Illinois, to determine whether the reading achievement of the children, whose intitial reading instruction was in I.T.A., was superior to that of the children whose initial reading instruction was in T.O. Was the intervention of the I.T.A. Reading Program for beginning readers worthwhile in the final analysis? A related problem was to determine whether instruction in I.T.A. was more successful for a particular ability group.

This study tested the following null hypothesis:

> H_o: As second graders reading T.O., pupils taught by I.T.A. at first grade will not be significantly superior in the reading areas of word meaning, paragraph meaning, and word study skills to pupils of comparable intelligence taught by T.O. as first graders.

Design of the Study

To test the hypothesis, a relatively stable community population was selected in which the I.T.A. reading program had been in effect for five and six years at Logan and Roosevelt Elementary Schools, respectively. Each school had

two pilot classrooms of I.T.A. at this date - 1971.

Approval to undertake this study was granted by the Superintendent of Moline Public Schools, Theodor Rockafellow. The principals at Logan and Roosevelt Elementary Schools have cooperated with the researcher in this comparative study.

The design of the study was the conventional experimental-control type. The Control T.O. Group used the Scott Forsman Basal Reading Series as their initial instruction in reading at the first grade level, 1969-1970. The Experimental I.T.A. Group used the I.T.A. Early-to-Read Ability Grouping Language Arts Program as their initial instruction in reading at the first grade level, 1969-1970. Late in the last semester of first grade, the Experimental I.T.A. Group was transferred to reading T.O.

Pupils from both treatment groups were then randomly assigned to their second grade classrooms at both Roosevelt and Logan Elementary Schools for the second year - 1970-1971. Both groups are now using, as their basis of reading instruction, the Scott Forsman Basal Reading Series. For the purposes of this study, the Experimental I.T.A. Group and the Control T.O. Group from each school, Roosevelt and Logan Elementary, were matched as nearly as possible on I.Q. and socio-economic status or retrospective measures.

Procedures

The Kuhlman Anderson Test of Intelligence was administered to the second grade class, 1970-1971, by the

principals at Logan and Roosevelt Elementary Schools in October, 1970. These scores were then used as the criteria for matching the Experimental I.T.A. and Control T.O. Groups at both schools.

The Stanford Achievement Test, Primary II, Reading, (Form W), was administered by the researcher on February 3 and 4, 1971 at Roosevelt and Logan Elementary Schools, respectively. This instrument tested the following reading skills: Word Meaning, Paragraph Meaning, and Word Study Skills. A copy of the Stanford Achievement Test may be found in Appendix B.

The Chronological Age for the Experimental I.T.A. Group and the Control T.O. Group from both Roosevelt and Logan Elementary Schools was then mathematically tabulated to the month when the Stanford Achievement Test was administered - February, 1971. A total composite of the matched groups according to I.Q., Chronological Age, and the raw scores from the Stanford Achievement Test may be found in Appendix C.

The raw data were then statistically analyzed by the following procedures:

1. From Roosevelt Elementary School, one Experimental I.T.A. Group was compared with one Control T.O. Group. The Mean, Standard Deviation, and Standard Error of Measure were calculated for each group on the Stanford Achievement Test scores, Word Meaning, Paragraph Meaning, and Word Study Skills, the Kuhlman Anderson I.Q. Test, and the Chronological Age. The t-test statistic was then computed to compare

the Mean Scores of the I.T.A. Group and the T.O. Group on the above variables.

2. From Logan Elementary School, one Experimental I.T.A. Group was compared with one Control T.O. Group. The Mean, Standard Deviation, and Standard Error of Measure were calculated for each group on the Stanford Achievement Test scores, Word Meaning, Paragraph Meaning, and Word Study Skills, the Kuhlman Anderson I.Q. Test, and the Chronological Age. The t-test statistic was then computed to compare the Mean Scores of the I.T.A. Group and the T.O. Group on the above variables.

3. Total I.T.A. Groups, (one from Roosevelt and one from Logan), were then compared with Total T.O. Groups, (one from Roosevelt and one from Logan). The Mean, Standard Deviation, and Standard Error of Measure were calculated for each total group on the Stanford Achievement Test scores, Word Meaning, Paragraph Meaning, and Word Study Skills, the Kuhlman Anderson I.Q. Test, and the Chronological Age. The t-test statistic was then computed to compare the Mean Scores of the Total I.T.A. Group and the Total T.O. Group on the above variables.

4. The I.Q. range of the Experimental I.T.A. Group at both schools was then separated at the score of 110, and the reading achievement scores of each group were further analyzed accordingly. An analysis of variance was used since the researcher wished to find if the I.T.A. Reading Program achieved more significant results for a particular ability group. A particular ability group was determined by this criteria - Above Average Ability consisted of an I.Q. score of 111 and above; Average Ability consisted of an I.Q. score of 110 and below.

A .05 level of significance was set for the study, as this level would be sufficiently probable to warrant acceptance or rejection of the null hypothesis. A two-tailed test was selected in order to determine the positive or negative direction of the test.

CHAPTER IV

ANALYSIS OF DATA AND RESULTS

Introduction

This study involved the comparison of reading achievement between those children whose initial instruction was in I.T.A., and those children whose initial instruction was in T.O. Of equal importance to the study was the investigation of the reading achievement of a particular ability group in order to determine for which group the instruction in I.T.A. had been more successful.

The study tested the following null hypothesis:

> H_o: As second graders reading T.O., pupils taught by I.T.A. at first grade level will not be significantly superior in the reading areas of word meaning, paragraph meaning, and word study skills to pupils of comparable intelligence taught by T.O. as first graders.

The subjects in this study were from the second grade class of two elementary schools in Moline, Illinois. From Roosevelt Elementary School, one Experimental I.T.A. Group and T.O. Control Group were matched and compared. From Logan Elementary School, one matched Experimental I.T.A. Group was compared with its T.O. counterparts.

The data were secured through the use of the Stanford Achievement Test, Primary II, Reading, (Form W), which was

given by the researcher. This test was administered on February 3, 1971 at Roosevelt Elementary School and on February 4, 1971 at Logan Elementary School. Each matched group from each school was tested simultaneously in a typical classroom situation.

The analyses of the data were done through the use of five variables. Three of these were reading variables and were related to the Stanford Achievement Test, namely Word Meaning, Paragraph Meaning, and Word Study Skills. The remaining two variables were I.Q. and Chronological Age.

A .05 level of significance for the two-tailed was set for this study. The data were compared by degrees of freedom of the t-test statistic, using the Table of Critical Value of t.

In this chapter, the findings of this study are presented in table form in four parts.

Part I - The statistical results on each variable are reported by Mean, Standard Deviation (S.D.), and Standard Deviation of Error (S.E.).

Part II - The results of the t-test statistic on the Mean score on each variable are reported.

Part III - The variance of analysis on the reading variables are presented for the Roosevelt and Logan Experimental I.T.A. Groups by Mean, S.D. and S.E.

Part IV - The analysis of variance on the reading variables using the t-test statistic on the Mean score are reported.

Part I

Statistical Results on Total Variables

For each class - Roosevelt I.T.A., Roosevelt T.O., Logan I.T.A., and Logan T.O. - each variable was compiled separately. The statistical data consisting of the Mean, S.D., and S.E. were computed and tabulated for each variable for each class. (Table 1-10)

The combined total of I.T.A. and T.O. from both Roosevelt and Logan Elementary School are then presented. Again, each variable was compiled separately. The statistical data consisting of the Mean, S.D., and S.E. were computed and tabulated for each variable for each total group. (Table 11-15)

TABLE 1

CHRONOLOGICAL AGE

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	18	7.80	4.72	1.11
T.O.	18	7.71	4.71	1.11

TABLE 2

I.Q.

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	18	111.39	4.96	1.17
T.O.	18	112.22	5.09	1.20

TABLE 3

WORD MEANING

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	18	2.84	4.10	.96
T.O.	18	2.74	4.12	.97

TABLE 4

PARAGRAPH MEANING

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	18	2.88	4.39	1.03
T.O.	18	2.68	4.44	1.04

TABLE 5

WORD STUDY SKILLS

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	18	3.87	3.73	.88
T.O.	18	3.31	3.76	.88

TABLE 6

CHRONOLOGICAL AGE

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	17	8.24	4.24	1.02
T.O.	17	7.98	4.26	1.03

TABLE 7

I.Q.

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	17	108.35	4.96	1.20
T.O.	17	106.29	4.93	1.19

TABLE 8

WORD MEANING

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	17	2.74	4.55	1.10
T.O.	17	2.53	4.52	1.10

TABLE 9

PARAGRAPH MEANING

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A	17	2.81	3.92	.95
T.O.	17	2.61	3.73	.91

TABLE 10

WORD STUDY SKILLS

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	S.D.	S.E.
I.T.A.	17	3.59	3.63	.88
T.O.	17	2.65	3.49	.85

TABLE 11

CHRONOLOGICAL AGE

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	S.D.	S.E.
Total I.T.A.	35	8.01	4.30	.73
Total T.O.	35	7.84	4.32	.73

TABLE 12

I.Q.

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	S.D.	S.E.
Total I.T.A.	35	109.91	4.62	.78
Total T.O.	35	109.34	4.69	.79

TABLE 13

WORD MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	S.D.	S.E.
Total I.T.A.	35	2.79	4.29	.73
Total T.O.	35	3.64	4.31	.73

TABLE 14

PARAGRAPH MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	S.D.	S.E.
Total I.T.A.	35	2.84	4.33	.73
Total T.O.	35	2.65	4.35	.74

TABLE 15

WORD STUDY SKILLS

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	S.D.	S.E.
Total I.T.A.	35	3.74	3.91	.67
Total T.O.	35	2.99	3.77	.64

Part II

Results of the t-Test Statistic on Total Variables

The t-test statistic was computed in order to compare the Mean Scores for a significant difference between the Experimental I.T.A. Group and the Control T.O. Group from Roosevelt and Logan Elementary Schools.

In Table 16-20, Roosevelt I.T.A. and Roosevelt T.O. were compared on each variable. No significant difference at the .05 level for the two-tailed test was found on the

five variables involved: C.A., I.Q., Word Meaning, Paragraph Meaning, and Word Study Skills.

In Table 21-25, Logan I.T.A. and Logan T.O. were compared on each variable. No significant difference was found at the .05 level for the two-tailed test on four of the variables involved: C.A., I.Q., Word Meaning, and Paragraph Meaning. However, on the variable, Word Study Skills, a significant difference at the .05 level was found in favor of the I.T.A. Group.

Total I.T.A. (Roosevelt I.T.A. and Logan I.T.A.) was compared with Total T.O. (Roosevelt T.O. and Logan T.O.) by the Mean Scores on each variable. (Table 26-30) On four of the variables, C.A., I.Q., Word Meaning, and Paragraph Meaning, no significant difference was found between the groups at the .05 level for the two-tailed test. A significant difference at the .05 level was found, however, on the variable, Word Study Skills, for the Total I.T.A. Group.

TABLE 16

CHRONOLOGICAL AGE

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	18	7.80	t=0.8142
T.O.	18	7.71	N.S. at .05

TABLE 17

I.Q.

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	18	111.39	t=-0.3026
T.O.	18	112.22	N.S. at .05

TABLE 18

WORD MEANING

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	18	2.84	t=0.4747
T.O.	18	2.74	N.S. at .05

TABLE 19

PARAGRAPH MEANING

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	18	2.88	t=0.9942
T.O.	18	2.68	N.S. at .05

TABLE 20

WORD STUDY SKILLS

ROOSEVELT ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	18	3.87	t=1.3801
T.O.	18	3.31	N.S. at .05

TABLE 21

CHRONOLOGICAL AGE

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	17	8.24	t=1.5934
T.O.	17	7.98	N.S. at .05

TABLE 22

I.Q.

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	17	108.35	t=0.6770
T.O.	17	106.29	N.S. at .05

TABLE 23

WORD MEANING

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	17	2.74	t=1.0373
T.O.	17	2.53	N.S. at .05

TABLE 24

PARAGRAPH MEANING

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	17	2.81	t=1.1653
T.O.	17	2.61	N.S. at .05

*TABLE 25

WORD STUDY SKILLS

LOGAN ELEMENTARY SCHOOL

Group	N	Mean	t-test
I.T.A.	17	3.59	t=2.0450
T.O.	17	2.65	S. at .05

*Significant at .05 level.

TABLE 26

CHRONOLOGICAL AGE

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	t-test
Total I.T.A.	35	8.01	t=1.6333
Total T.O.	35	7.84	N.S. at .05

TABLE 27

I.Q.

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	t-test
Total I.T.A.	35	109.91	t=0.2727
Total T.O.	35	109.34	N.S. at .05

TABLE 28

WORD MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	t-test
Total I.T.A.	35	2.79	t=1.0444
Total T.O.	35	2.64	N.S. at .05

TABLE 29

PARAGRAPH MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	t-test
Total I.T.A.	35	2.84	t=1.5202
Total T.O.	35	2.65	N.S. at .05

*TABLE 30

WORD STUDY SKILLS

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

Group	N	Mean	t-test
Total I.T.A.	35	3.74	t=2.4229
Total T.O.	35	2.99	S. at .05

*Significant at .05 level.

Part III

Statistical Results Using The Analysis of Variance on Reading Variables

The I.Q. range of the Experimental I.T.A. Group from both Roosevelt and Logan Elementary Schools was then separated at the score of 110, and the reading variables were further analyzed. The Above-Average Ability I.T.A. Group consisted of those pupils with an I.Q. score of 111 and above; Average Ability I.T.A. Group consisted of those pupils with an I.Q.

score of 110 and below. An Analysis of Variance was computed on the three reading variables: Word Meaning, Paragraph Meaning, and Word Study Skills, for each I.T.A. Ability Group.

For each I.T.A. Ability Group from Roosevelt Elementary School, the Mean, S.D., and S.E. were computed and tabulated on each reading variable. (Table 31-33) Likewise, the same procedure was followed for each I.T.A. Ability Group from Logan Elementary School. (Table 34-36).

Finally, the scores from the Above-Average I.T.A. Ability Group and the Average I.T.A. Ability Group from both schools were totaled. The Mean, S.D., and S.E. were computed and tabulated for each reading variable for the total I.T.A. Ability Groups. (Table 37-39)

TABLE 31

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD MEANING

ROOSEVELT ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Above-Average	11	3.08	4.46	1.34
Average	7	2.47	4.92	1.86

TABLE 32

ANALYSIS OF VARIANCE OF READING VARIABLES

PARAGRAPH MEANING

ROOSEVELT ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Above-Average	11	3.13	4.38	1.32
Average	7	2.49	3.67	1.39

TABLE 33

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD STUDY SKILLS

ROOSEVELT ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Above-Average	11	4.42	4.38	1.32
Average	7	3.01	3.49	1.32

TABLE 34

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD MEANING

LOGAN ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Above-Average	8	2.69	3.88	1.37
Average	9	2.79	4.34	1.44

TABLE 35

ANALYSIS OF VARIANCE OF READING VARIABLES

PARAGRAPH MEANING

LOGAN ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Above-Average	8	2.97	4.91	1.73
Average	9	2.66	4.14	1.83

TABLE 36

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD STUDY SKILLS

LOGAN ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Above-Average	8	3.89	3.77	1.33
Average	9	3.33	2.98	.99

TABLE 37

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Total Above-Average	19	2.92	4.58	1.05
Total Average	16	2.65	4.18	1.04

TABLE 38

ANALYSIS OF VARIANCE OF READING VARIABLES

PARAGRAPH MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Total Above-Average	19	3.06	4.68	1.07
Total Average	16	2.58	4.03	1.00

TABLE 39

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD STUDY SKILLS

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

I.T.A. Ability Group	N	Mean	S.D.	S.E.
Total Above-Average	19	4.19	3.99	.92
Total Average	16	3.19	3.73	.93

Part IV

Results of t-test Statistic on Reading Variables Using the Analysis of Variance

The t-test statistic was computed in order to compare the Mean Scores on each reading variable for each particular I.T.A. Ability Group. This information would provide the criteria for determining which I.T.A. Ability Group had profited more by the I.T.A. Reading Program.

In Table 40-42, the Above-Average I.T.A. Ability Group was compared to the Average I.T.A. Ability Group from Roosevelt Elementary School by their Mean Scores on the three reading variables, using the t-test statistic. A significant difference at the .05 level for the two-tailed test was found for the Above-Average I.T.A. Ability Group on all three reading variables: Word Meaning, Paragraph Meaning, and Word Study Skills.

From Logan Elementary School, the Above-Average and Average I.T.A. Ability Groups were compared, using the same procedure as above. No significant difference at the .05 level was found between these two ability groups on the reading variables involved. (Table 43-45)

The scores of the Total Above-Average and Average I.T.A. Ability Groups from Roosevelt and Logan Elementary School were then compiled and compared by their Mean Scores. By use of the t-test statistic, a significant difference at the .05 level for

the two-tailed test was found on the reading variables, Paragraph Meaning and Word Study Skills. No significant difference at the .05 level was found, however, on the reading variable, Word Meaning, for the Total I.T.A. Ability Groups. (Table 46-48)

TABLE 40

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD MEANING

ROOSEVELT ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	t-test
Above-Average	11	3.08	t=2.5601
Average	7	2.47	S. at .05

TABLE 41

ANALYSIS OF VARIANCE OF READING VARIABLES

PARAGRAPH MEANING

ROOSEVELT ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	t-test
Above-Average	11	3.13	t=2.9622
Average	7	2.49	S. at .05

TABLE 42

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD STUDY SKILLS

ROOSEVELT ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	t-test
Above-Average	11	4.42	t=2.8282
Average	7	3.01	S. at .05

TABLE 43

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD MEANING

LOGAN ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	t-test
Above-Average	8	3.89	t=0.7754
Average	9	3.33	N.S. at .05

TABLE 44

ANALYSIS OF VARIANCE OF READING VARIABLES

PARAGRAPH MEANING

LOGAN ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	t-test
Above-Average	8	2.97	t=1.3135
Average	9	2.66	N.S. at .05

TABLE 45

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD STUDY SKILLS

LOGAN ELEMENTARY SCHOOL

I.T.A. Ability Group	N	Mean	t-test
Above-Average	8	3.89	t=0.7754
Average	9	3.33	N.S. at .05

TABLE 46

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

I.T.A. Ability Group	N	Mean	t-test
Total Above-Average	19	2.92	t=1.3843
Total Average	16	2.65	N.S. at .05

TABLE 47

ANALYSIS OF VARIANCE OF READING VARIABLES

PARAGRAPH MEANING

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

I.T.A. Ability Group	N	Mean	t-test
Total Above-Average	19	3.06	t=3.0428
Total Average	16	2.58	S. at .05

TABLE 48

ANALYSIS OF VARIANCE OF READING VARIABLES

WORD STUDY SKILLS

TOTAL ROOSEVELT AND LOGAN ELEMENTARY SCHOOLS

I.T.A. Ability Group	N	Mean	t-test
Total Above-Average	19	4.19	t=2.3726
Total Average	16	3.19	S. at .05

In summary, the results of the data appear to support the Null Hypothesis with regard to the reading achievement of the Experimental I.T.A. Group and the Control T.O. Group from Roosevelt and Logan Elementary Schools, Moline, Illinois. Although the Experimental I.T.A. Group achieved higher scores on the Stanford Achievement Test, these scores were not significant at the .05 level of the two-tailed test. The one exception to this appeared to be in the reading area of Word Study Skills. The Experimental I.T.A. Group from Logan Elementary School achieved a score on the reading variable, Word Study Skills, which was significant at the .05 level. (Table 25) This score was then combined with the score of the Roosevelt Experimental I.T.A. Group on the total composite. This total score on the reading variable, Word Study Skills, thus appeared significant at the .05 level when the Total I.T.A. and Total T.O. Groups were compared. (Table 30)

In reference to the Analysis of Variance used on the

three reading variables, Word Meaning, Paragraph Meaning, and Word Study Skills, the Above-Average I.T.A. from Roosevelt Elementary School achieved scores significant at the .05 level when compared to the Average I.T.A. Ability Group from that school. However, at Logan Elementary School, quite a different situation was found when the Above-Average I.T.A. Ability Group was compared to the Average I.T.A. Ability Group. No significant difference on these reading variables was found at the .05 level between these two I.T.A. Ability Groups.

When the scores of the Above-Average and Average I.T.A. Groups from Roosevelt and Logan Elementary Schools were totaled and compared, the following results were found: On the reading variable, Word Meaning, no significant difference at the .05 level was found between Total I.T.A. Ability Groups. However, on the reading variables, Paragraph Meaning and Word Study Skills, a significant difference at the .05 level was found in favor of the Total Above-Average I.T.A. Ability Group.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS FOR FURTHER STUDY

Introduction

The Initial Teaching Alphabet is a beginning reading alphabet adhering to the strict rule that one character always represents one sound only. It was designed as a device for teaching reading to be used in the initial stages only. There appears to be diversity of opinion concerning its value, and if decisions are to be reached by curriculum directors and boards of education, there seems to exist a genuine need for indepth studies of the young child using the Initial Teaching Alphabet as a beginning approach to reading and his subsequent reading achievement. Prior to this time, no investigation along this line had occurred in Mol ne, Illinois.

The problem in this study was twofold. The first problem was to determine whether the reading achievement of the children at Roosevelt and Logan Elementary Schools, who began their reading instruction with I.T.A. and later transferred to T.O., was superior to that of the children whose initial reading instruction was in T.O. The second problem was to determine whether instruction in I.T.A. was more successful for a particular ability group.

This study tested the following Null Hypothesis:

> H_o: As second graders reading T.O., pupils taught by I.T.A. at first grade level will not be significantly superior in the reading areas of word meaning, paragraph meaning, and word study skills to pupils of comparable intelligence taught by T.O. as first graders.

The purposes of the study were:

1. To compare the growth in reading achievement in word meaning, paragraph meaning, and word study skills during second grade for both the Experimental I.T.A. Group and the Control T.O. Group.
2. To determine if the I.T.A. Reading Program provides significant reading achievement for a particular ability group.
3. To provide some initial data for the Moline Public School System as to whether I.T.A. is an effective initial reading program for first grade students.

The subjects in the study were from two public elementary schools of fairly comparable socio-economic levels in Moline, Illinois. From Roosevelt Elementary School, an Experimental I.T.A. Group of eighteen (18) students was matched on I.Q. ability and retrospective measures to a Control T.O. Group of eighteen (18) students. From Logan Elementary School, thirty-four (34) students were matched by the same criteria - seventeen (17) Experimental I.T.A. Group

students and seventeen (17) Control T.O. students. Total subjects from both schools numbered seventy (70).

The following data were used in the study:

I.Q. scores were obtained through the Kuhlman Anderson Test of Intelligence which was administered by the principals at Roosevelt and Logan Elementary Schools in October, 1970.

The Stanford Achievement Test, Primary II, Reading, (Form W), was the instrument used to obtain the data needed on reading achievement. The test was administered by the researcher on February 3 and 4, 1971 at Roosevelt and Logan Elementary Schools, respectively.

The Chronological Age for the Experimental I.T.A. Group and the Control T.O. Group was then mathematically tabulated to the month when the Stanford Achievement Test had been administered.

The analyses of the data were done through the use of five variables, namely, I.Q., Chronological Age, and the Reading Variables, Word Meaning, Paragraph Meaning, and Word Study Skills. The t-test statistic was computed on the Mean Score of each variable for each group to determine a significant difference at the .05 level for the two-tailed test. The same procedure was used on the Analysis of Variance on Reading Variables to compare I.T.A. Ability Groups.

Summary of the Findings

The results of the t-test statistic appeared to support the Null Hypothesis with regard to the reading achievement of the Experimental I.T.A. Group and the Control T.O. Group from Roosevelt and Logan Elementary Schools, Moline, Illinois. Higher scores were noted for the Experimental I.T.A. Group; however, these scores were not significant at the .05 level for the two-tailed test. One exception to this appeared in the reading area of Word Study Skills as the Experimental I.T.A. Group from Logan Elementary School achieved significantly at the .05 level on this reading variable. It again appeared significant at the .05 level when Total I.T.A. was compared with Total T.O.

The results of the Analysis of Variance on Reading Variables revealed that the Above-Average I.T.A. Ability Group from Roosevelt Elementary School achieved significantly at the .05 level when compared to the Average I.T.A. Ability Group from that school. At Logan Elementary School, however, no significant difference at the .05 level was found between the Above-Average and Average I.T.A. Ability Groups.

When the scores of the two I.T.A. Ability Groups from Roosevelt and Logan Elementary Schools were totaled and compared, no significant difference at the .05 level was found on the reading variable, Word Meaning. However, on the reading variables, Paragraph Meaning and Word Study Skills, a

significant difference at the .05 level was found in favor of the Total Above-Average I.T.A. Ability Group.

Conclusions

On the basis of the findings of this study several conclusions seem warranted.

First, it appears that the intervention of the I.T.A. Reading Program at the first grade level has not resulted in the Experimental I.T.A. Groups from Roosevelt and Logan Elementary Schools achieving significantly higher reading scores at the second grade level when compared to their Control T.O. counterparts. It does not appear, then, that traditional orthography was an important source of difficulty for the beginning readers involved in this study.

Second, the Experimental I.T.A. Group from Logan Elementary School did achieve significantly higher on one variable, Word Study Skills. Many factors may have contributed to this. Namely, the one-character to one-sound relationship of the Initial Teaching Alphabet may be a distinct advantage when dealing with word-analysis techniques. Also, the teacher herself may be an uncontrollable variable in this regard, as one teacher may emphasize this skill more repeatedly and thoroughly than another teacher. Finally, the individual child must be considered. Some children rely heavily on word-analysis techniques; others may be more proficient in other skills such as contextual clues, visual imagery,

auditory perception, etc.

Third, the results from the Analysis of Variance on Reading Variables showed higher achievement for the Above-Average I.T.A. Ability Group from Roosevelt Elementary School as well as the combined Total Above-Average I.T.A. Ability Group from both schools. However, the significant achievement of this group may not be due to the I.T.A. treatment alone for this group may have achieved equally as well with a totally different reading program due to their intellectual ability.

A much different situation arose when the Analysis of Variance on Reading Variables was analyzed for Logan Elementary School. When the scores of the Above-Average I.T.A. Ability Group were compared to the scores of the Average I.T.A. Ability Group, no significant difference was found. It should be noted, however, that the Above-Average Group scored slightly higher in the reading areas of Paragraph Meaning, and Word Study Skills; whereas the Average Group scored higher in the reading area of Word Meaning. These results may have been due to variables which were uncontrollable in this study and surely signifies a need for further follow-up and appraisal.

Implications for Further Study

Perhaps the real value of the Initial Teaching Alphabet is essentially at the first grade level. The use of I.T.A. here may be justified if the child learns to read quickly and

successfully and if it relieves the frustrations of traditional orthography for the beginning reader.

Determining the best method or program for teaching reading has been a scholastic battlefield for years. At the present time, the actual process by which the beginning reader first learns to gather meaning from the printed page is unknown. Children are unique individuals and due to differences in their mental makeup and environmental backgrounds, different children approach the reading task in many diverse ways. The Initial Teaching Alphabet offers a beginning alphabet for the beginning reader. If we are to deal effectively with the child and his specific needs, the simplicity and usefulness of I.T.A. surely cannot be discounted.

It would be recommended, therefore, that in an Experimental I.T.A. Program such as the one in the Moline Public School System, thorough research and evaluation be done during the primary grades, especially at the first grade level. The Experimental I.T.A. Group should be tested on their reading skills with a transliterated examination in I.T.A. and compared to their T.O. counterparts at this level.

Transfer to reading T.O. should take place only when the individual child is proficient in reading I.T.A. If transfer to T.O. takes place too soon, the real value of the I.T.A. Reading Program is lost. After this transfer is successfully achieved, an appropriate level of skill should

be obtained in reading T.O. before re-testing is considered in order to re-evaluate.

A re-examination of the I.T.A. Reading Program and its effectiveness with various ability groups certainly seems in order. It would appear that more information and data are needed with regard to this aspect of the study, and that modifications of the existing I.T.A. Reading Program in Moline may be needed.

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APPENDIX A

THE INITIAL TEACHING ALPHABET

Character	Name Traditionally Spelt	Sample I.T.A. Word	Same Word in T.O.
1. b	bee	bat	bat
2. c	kee	cut	cut
3. d	dee	det	debt
4. f	ef	fit	fit
5. g	gae	gun	gun
6. h	hay	hunt	hunt
7. j	jay	jest	jest
8. k	kay	aks	axe
9. l	ell	lip	lip
10. m	em	mous	mouse
11. n	en	nævy	navy
12. p	pee	pens	pence
13. r	ray	rist	wrist
14. ɾ	ɛr	fiɾst	first
15. s	ess	sord	sword
16. t	tee	tiet	tight
17. v	vee	velvet	velvet
18. w	way	wun	one
19. z	zed (or zee)	zæbra	zebra
20. ʒ	zess	horʒ	horse
21. ch	chae	church	church
22. ŋ	ing	briŋ iŋ	bringing

THE INITIAL TEACHING ALPHABET continued

Character	Name Traditionally Spelt	Sample I.T.A. Word	Same Word in T.O.
23. ʃh	ish	ʃhaft	shaft
24. th	ith	thaut	thought
25. ŧh	thee	ŧhis	this
26. wh	whay	wher	where
27. ʒ	ʒhee	meʒuer	measure
28. y	yay	yot, city	yacht, city
29. æ	aid	cæs	case
30. a	at	cash	cash
31. ɑ	ahd	cɑm	calm
32. ą	ask	cąsl	castle
33. e	et	net	net
34. ɛ	eed	nɛt	neat
35. i	it	nit	knit
36. ɨe	ide	nɨet	night
37. o	ot	not	knot
38. œ	ode	nœt	note
39. u	ut	tuf	tough
40. ʊe	ued	tʊen	tune
41. ɷ	oot	tɷk	took
42. ɯ	ood	tɯth	tooth
43. ɑl	aud	tɑlt	taught
44. ɔi	oid	tɔi	toy
45. ɑu	owd	tɑun	town

APPENDIX C

ROOSEVELT ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

KUHLMAN ANDERSON I.Q. TEST

EXPERIMENTAL I.T.A. GROUP N=18	K.A. I.Q.	CONTROL T.O. GROUP N=18
PUPIL	SCORE	PUPIL
E1	130-139	C1
E2	120-119	C2
E3	117-119	C3
E4	116-116	C4
E5	116-116	C5
E6	115-115	C6
E7	114-114	C7
E8	113-113	C8
E9	112-112	C9
E10	111-112	C10
E11	111-110	C11
E12	109-109	C12
E13	107-108	C13
E14	106-107	C14
E15	105-107	C15
E16	105-106	C16
E17	102-102	C17
E18	96-96	C18

Date Test was administered: Kuhlman Anderson I.Q. Test - October 1970.

ROOSEVELT ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

CHRONOLOGICAL AGE

EXPERIMENTAL I.T.A. GROUP N=18	CHRONOLOGICAL AGE FEBRUARY - 1971	
PUPIL	YEARS	MONTHS
E1	7	8
E2	7	5
E3	7	9
E4	8	1
E5	7	7
E6	8	1
E7	7	4
E8	7	6
E9	8	1
E10	7	11
E11	8	3
E12	7	10
E13	7	10
E14	7	9
E15	7	6
E16	7	7
E17	8	1
E18	8	1

ROOSEVELT ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

CHRONOLOGICAL AGE

CONTROL T.O. GROUP N=18	CHRONOLOGICAL AGE FEBRUARY - 1971	
PUPIL	YEARS	MONTHS
C1	7 -	8
C2	8 -	1
C3	7 -	5
C4	8 -	3
C5	7 -	9
C6	7 -	10
C7	7 -	8
C8	7 -	8
C9	7 -	5
C10	7 -	9
C11	7 -	4
C12	8 -	5
C13	7 -	6
C14	7 -	5
C15	7 -	8
C16	7 -	3
C17	7 -	7
C18	8 -	3

ROOSEVELT ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

STANFORD ACHIEVEMENT TEST, PRIMARY II READING, FORM W

EXPERIMENTAL I.T.A. GROUP N=18	STANFORD ACHIEVEMENT TEST ADMINISTERED 2-3-71		
PUPIL	WORD MEANING SCORE	PARAGRAPH MEANING SCORE	WORD STUDY SKILLS SCORE
E1	4.2	3.5	5.0
E2	3.0	2.9	5.4
E3	3.2	3.3	4.8
E4	2.8	2.7	4.2
E5	3.0	3.2	3.5
E6	2.6	2.9	5.0
E7	2.8	2.9	4.8
E8	3.2	3.1	2.7
E9	3.5	3.0	5.6
E10	2.5	2.9	2.4
E11	3.1	4.0	5.2
E12	1.6	1.6	2.0
E13	1.9	2.5	2.5
E14	2.8	2.8	4.5
E15	2.7	2.5	2.5
E16	2.7	3.0	3.3
E17	3.1	3.1	3.9
E18	2.5	1.9	2.4

ROOSEVELT ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

STANFORD ACHIEVEMENT TEST, PRIMARY II READING, FORM W

CONTROL T.O. GROUP N=18	STANFORD ACHIEVEMENT TEST ADMINISTERED 2-3-71		
PUPIL	WORD MEANING SCORE	PARAGRAPH MEANING SCORE	WORD STUDY SKILLS SCORE
C1	4.4	4.0	6.3
C2	2.6	2.5	4.2
C3	2.5	2.9	2.1
C4	3.0	3.2	4.8
C5	3.5	3.5	3.9
C6	2.6	2.6	2.4
C7	3.5	3.3	5.4
C8	3.3	2.2	2.3
C9	2.0	2.4	2.9
C10	2.9	2.6	3.4
C11	2.8	3.0	3.0
C12	2.1	2.0	3.1
C13	2.1	2.7	2.9
C14	2.7	2.6	2.8
C15	1.7	1.7	1.6
C16	2.5	1.7	2.4
C17	3.7	3.5	3.9
C18	1.4	1.8	2.1

LOGAN ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

KUHLMAN ANDERSON I.Q. TEST

EXPERIMENTAL I.T.A. GROUP N=17	K.A. I.Q.	CONTROL T.O. GROUP N=17
PUPIL	SCORE	PUPIL
E1	122-122	C1
E2	119-119	C2
E3	115-115	C3
E4	114-114	C4
E5	114-113	C5
E6	112-113	C6
E7	111-111	C7
E8	111-111	C8
E9	109-109	C9
E10	107-106	C10
E11	107-101	C11
E12	106-101	C12
E13	105-99	C13
E14	102-97	C14
E15	102-95	C15
E16	93-91	C16
E17	93-90	C17

Date Test was administered: Kuhlman Anderson I.Q. Test - October 1970.

LOGAN ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

CHRONOLOGICAL AGE

EXPERIMENTAL I.T.A. GROUP N=17	CHRONOLOGICAL AGE FEBRUARY 1971	
PUPIL	YEARS	MONTHS
E1	7	7
E2	8	6
E3	7	8
E4	7	7
E5	7	10
E6	8	0
E7	8	1
E8	7	11
E9	7	10
E10	8	4
E11	9	0
E12	8	2
E13	8	9
E14	8	6
E15	9	0
E16	8	6
E17	8	9

LOGAN ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

CHRONOLOGICAL AGE

CONTROL T.O. GROUP N=17	CHRONOLOGICAL AGE FEBRUARY 1971	
PUPIL	YEARS	MONTHS
C1	8	3
C2	8	9
C3	7	8
C4	7	5
C5	7	7
C6	8	2
C7	7	9
C8	7	9
C9	7	4
C10	7	5
C11	8	8
C12	8	7
C13	8	0
C14	7	8
C15	8	7
C16	8	4
C17	7	8

LOGAN ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

STANFORD ACHIEVEMENT TEST, PRIMARY II READING, FORM W

EXPERIMENTAL I.T.A. GROUP N=17	STANFORD ACHIEVEMENT TEST ADMINISTERED 2-4-71		
PUPIL	WORD MEANING SCORE	PARAGRAPH MEANING SCORE	WORD STUDY SKILLS SCORE
E1	2.1	2.3	3.4
E2	1.8	3.1	2.5
E3	2.6	2.6	3.0
E4	2.5	2.3	3.0
E5	3.0	3.3	6.7
E6	3.5	3.5	3.3
E7	3.5	4.2	3.4
E8	2.5	2.5	5.8
E9	3.1	2.7	5.6
E10	2.6	2.5	2.7
E11	2.5	2.6	1.6
E12	3.5	3.3	5.6
E13	2.8	2.8	3.4
E14	3.6	2.6	3.5
E15	3.1	2.5	2.0
E16	1.8	2.4	2.3
E17	2.1	2.5	3.3

LOGAN ELEMENTARY SCHOOL

SECOND GRADE (1970-1971)

STANFORD ACHIEVEMENT TEST, PRIMARY II READING, FORM W

CONTROL T.O. GROUP N=17	STANFORD ACHIEVEMENT TEST ADMINISTERED 2-4-71		
PUPIL	WORD MEANING SCORE	PARAGRAPH MEANING SCORE	WORD STUDY SKILLS SCORE
C1	3.7	3.4	6.3
C2	1.6	2.4	3.1
C3	2.6	3.0	2.9
C4	3.0	3.1	3.1
C5	2.7	2.6	3.9
C6	3.0	2.6	2.3
C7	2.7	2.9	1.8
C8	2.6	2.9	1.5
C9	3.1	2.6	3.1
C10	1.8	2.2	2.7
C11	2.7	2.9	2.3
C12	1.8	2.4	1.6
C13	2.9	2.9	3.6
C14	2.7	2.5	2.2
C15	1.7	2.1	1.3
C16	1.7	1.4	1.4
C17	2.7	2.5	2.0